

Amy E. Earhart

Academic institutions interested in growing local digital humanities scholarship are experimenting with a range of institutional structures designed to leverage digital humanities work. Some institutions are launching undergraduate majors in digital humanities, others are developing digital humanities certification programs or PhD tracks, and others have launched digital humanities centers, an increasingly popular approach evidenced by the formation of centerNet, an international network of digital humanities centers (digitalhumanities.org/centernet/). Other institutions have experimented with the development of digital humanities laboratories. Unlike many early versions of digital humanities spaces that were constructed as centers or institutes, the more recent laboratory model implies a scholarly working space, real or virtual.¹ Existing labs include the Stanford Literary Lab (Stanford), Scholar's Lab (University of Virginia), Digital Scholarship Lab (U of Richmond), Humanities and CriticalCode Studies Lab (USC), the Humanities Laboratories (Duke U), Electronic Textual Cultures Lab (U Victoria), HUMLab (Sweden), The CulturePlex Laboratory (Western U), Digital Humanities Lab Denmark (Aarhus Denmark), and AlfaLab (Netherlands), among others. These labs are located in physical spaces designed to support scholarly inquiry by providing meeting space, programming, training, support, and equipment. Other digital humanities entities, such as HASTAC, the Humanities, Arts, Science, and Technology Advanced Collaboratory, define themselves as col-laboratories, virtual labs that exist as centers without walls (Siemens and Siemens 2012).² Participants in both types of labs may include postdoctoral fellows, librarians, research assistants, administrative staff, technical staff, such as programmers or developers, students, and subject specialists. Digital humanities labs are often multipurpose, with activities ranging from research to pedagogy.

The digital humanities lab has been constructed from various traditions including the design lab, art studio and science lab to meet the distinctive needs of humanities scholars, or as Patrik Svensson has noted, digital humanities labs are fusing forms from other traditions to develop a lab that serves our unique purposes (Svensson 2011). While the design lab

or art studio has had a great influence on many digital humanities labs, the model of the science laboratory is most often invoked by those that imagine the digital humanities lab-space. In part, this is because our current moment of digital renaissance mimics the historical moment in which science labs were developed. According to Pamela Smith's work on the history of science, laboratories underwent a dramatic shift in the seventeenth century. A laboratory was no longer an individually run "artisanal workshop" but the "site of science" (Park and Daston 2006, 292) which emphasized exploration through hands on activities and "the observation and manipulation of nature by means of specialized instruments, techniques, and apparatuses that require manual skills as well as conceptual knowledge for their construction and deployment" (Hannaway 1986, 585). This shift to a modern understanding of knowledge produced with the manipulation of tools is in many ways like the current trend in digital humanities where technological tools and methods are both built and applied. Like many science labs, digital humanities labs contain equipment utilized by digital humanists, emphasize collaborative research, and focus on theoretical and applied research. Digital humanities labs also train and mentor students and faculty, serving as pedagogical and outreach or service arms dedicated to growing work within the field, tasks which are often conducted in centers or offices that are separated from the science laboratory.³ For example, Umea University's HUMLab is multipurpose: "HUMlab is an environment of innovation which works as a place of study, a research laboratory, a place for project development, as well as a lecture hall or exhibition space" ("About Humlab"). While science labs are often clustered by area, equipment or topic, digital humanities labs are often broader, more multipurpose, and more inclusive by both design and funding limitations. Digital humanities labs are experimental models attempting to fill the various needs of the digital humanities community including the desire to expand the field, support a broad range of projects, and provide training for students and faculty.

The fusion of various traditions is necessary for the humanities lab experiment due to the type of scholarly questions and research methodologies best suited for such questions, which makes the science lab model an imperfect fit within a humanities framework, even a humanities framework that emphasizes technology. Instead, the maker traditions from the arts and architecture have been useful in the construction of laboratory models. HUMLab, Duke's Greater Than Games Lab, and a newly constructed digital humanities lab at North Carolina State University, for example, were developed in close connection with design schools and, because of this influence, outwardly emphasize process oriented approaches and artistic spaces.⁴ As digital humanities continue to evolve it seems likely that laboratories will increasingly blend various traditions to meet particular needs. At this particular historical moment, however, the digital humanities lab is primarily imagined as science lab-like by both supporters and detractors.

The potential application of the science model often generates contention. During the DH 2012 conference, Lynne Siemens gave a talk titled, "Notes from the Collaboratory: An informal study of an Academic DH Lab in Transition" to which Eric Johnson tweeted: "I jotted a note to myself earlier: 'Interesting to study: how DH views science.' Seems ... idealized?" Doug Reside responded: "Hmm ... or unfairly vilified."⁵ Johnson and Reside capture the current tension in the use of a science model. On the one hand, digital humanists utilize a means of scholarly production more closely related to science than traditional humanities, including the use of high-performance computing and collaboration, and are necessarily interested in adopting models of scholarly production that support such inquiry. Yet the digital humanities are deeply enmeshed with the humanities, of which some strains, such as literary criticism, have been imagined as oppositional to science. The two responses that emerged on the Twitter stream in response to science—idealization versus demonization—are divergent approaches that nonetheless must coexist within the digital humanities framework.

There are those in digital humanities that see the laboratory as the ideal space in which to conduct future research. Franco Moretti (2004) has mused, "'My little dream,' he added wistfully, 'is of a literary class that would look more like a lab than a Platonic academy.'" "Labs are built around the process of discovery," writes Cathy Davidson (1999: B4-5), "and discovery is rooted in the practice of what is already known (past experiments, lab technique). A lab supports work that is new, and it concomitantly requires collaboration across fields and disciplinary subfields, as well as across generations."⁶ While in many labs this is true, and certainly an ideal to which digital humanities labs aspire, it is important not to romanticize the lab. Science labs emphasize collaboration, but hierarchies may be apparent. Linda and Michael Hutcheon (2001: 1367-68) agree that laboratory science "requires collaboration" but remain cautious of adopting the model wholesale, as there is a "hierarchy implicit in that model, with its 'stratified division of technical and intellectual labor.'" As Lisa Ede and Andrea Lunsford (2001: 363) remind us, "the sciences have a poor record of including women and members of minorities—or their perspectives—in research." John Unsworth concurs, noting, "In humanities, we often emulate what we think the sciences do, but our emulation may not actually bear that much resemblance to the reality of what goes on in science. Often science looks more collaborative because a lot of people get together to write a grant proposal, but that does not mean that they have necessarily figured out how to work together" (Unsworth and Tupman 2012: 232; Patrik Svensson 2011: para. 22) succinctly articulates the problems of uncritical adoption of a science model: "First, existing humanities infrastructure may be disregarded as we do not have a tradition of science-like infrastructure. Second, the science-based and data-driven model may be imposed on the Humanities (sometimes by humanists themselves) without careful discussion of the premises and consequences. Third, there is a risk that infrastructural needs or agendas compatible with the largely science based model will be the ones most likely to be prioritized.

Fourth, new humanities infrastructure may be uncritically based on existing infrastructure and associated epistemic commitments." So, while we might look to the laboratory as a model, we need to be critical about its implementation in our field.

As many working within digital humanities laud the laboratory model, there remains deep suspicion of bringing a science model to humanities work. The split between science and the humanities is longstanding, *à la* C. P. Snow, and resistance to utilizing anything from science is increasing as university funding and prestige is increasingly seen, by some humanists, to correlate with STEM areas rather than humanities fields. We might also have a historical structural problem in the very emergence of digital humanities that contributes to the tension. Martha Nell Smith (2007) contends that digital humanities developed as a space to which practitioners hoped to flee from the shifts in the profession that arose out of the cultural studies movement. In "The Human Touch: Software of the Highest Order, Revisiting Editing as Interpretation," Smith highlights the digital humanities' retreat into modes of analytics, objective approaches as "safe" alternatives to the messy fluidities found in literary studies. She notes, "It was as if these matters of objective and hard science provided an oasis for folks who did not want to clutter sharp, disciplined, methodical philosophy with considerations of the gender-, race-, and class-determined facts of life . . . Humanities computing seemed to offer a space free from all this messiness and a return to objective questions of representation" (4). My own experience in running a focus group during an NEH seminar on tenure and promotion confirms how deep the science/humanities divide remains. When I suggested that participants consider what constitutes a humanities data set, most responded in a negative, visceral manner to the use of a science term to describe humanities materials. As one participant noted, why apply science terminology to humanities? Science and the humanities are thus often seen as two very separate and distinct fields that have good reason to remain separate and should remain so.

As Christine Borgman (2009: para. 2) has noted, "The humanities need not emulate the sciences, but can learn useful lessons by studying the successes (and limitations) of cyberinfrastructure and eScience initiatives."⁷ Certainly the science laboratory is a structure that we might use to examine the way in which equipment could be shared amongst scholars or funding is acquired and distributed, but it might best serve the digital humanities to look beyond the sciences to model how individuals might work collaboratively. A hallmark of digital humanities work is an emphasis on multiple partner participants, including technologists, subject specialists, and librarians, all necessary to complete the wide-ranging projects we imagine. Subsequently, we are developing models that link our faculty to students, community partners, and the greater public. How do we develop a humanistic laboratory "where no solitary thinker—no matter how brilliant or creative—could think through a complex problem as comprehensively as a group of thinkers from different fields, with different areas of expertise, different

disciplinary training and biases, and from different intellectual generations?" (Davidson 1999). Rather than emphasize an adopted laboratory model, it might be more useful, and even politically savvy, to emphasize a laboratory model as one that privileges traditional humanistic inquiry through material and spatial construction. Svensson (2011) has described the way that the seminar table serves as an established model of humanistic collaboration and, therefore, a key material piece of any lab. Further, making spaces of architecture, art, and design offer equally interesting ways to consider collaboration and creativity. From town art production studio spaces, such as the small town Concord Art Association, Concord, Massachusetts, that allows members a space in which to work, to community driven open access design studios, such as the Portland, Oregon Radius Community Art Studios, which allow open drop-in studio use, laboratories might become an interface to the localized community. Such a model is very enticing when considered in connection to public digital humanities movements. The lab might exist physically, as is the case with groups like Scholar's Lab, or virtually, as is the case of HASTAC. Nancy Nersessian (2006) conceptualizes the research laboratory as "not simply a physical space existing in the present, but rather a dynamic problem space, constrained by the research program of the laboratory director, that reconfigures itself as the research program moves along in time and takes new directions in response to what occurs both in the laboratory and in the wider community of which the research is a part" (130).

As we develop collaborative approaches, it is imperative that we think carefully about the impact of the institutional structures that we adopt. Lynne Siemens et al. (2009) discovered, in her extended study of digital humanists and collaboration, that "collaborative issues include equitable distribution of work, interpersonal issues, working across disciplinary boundaries and expectations." Bethany Nowviskie (2011b) has written extensively on collaborative practices in digital humanities, giving particular attention to tensions between tenure and tenure track faculty and alt-ac career digital humanists driven by "institutional policies . . . that *codify inequities* among collaborators of differing employment status." Nowviskie has argued that equitably distributed credit will prove beneficial to all partners, leading "to strengthened research-and-development partnerships in DH" and "promoting a sense of *shared ownership of knowledge production*" that "will result in better design decisions and more enthusiastic preservation of our cultural and scholarly record." The sciences provide various models for representing individual contributions to projects, primarily denoted by the author order on publications. The author order represents the contribution level. Some science fields list the graduate students who conduct the research behind the lead faculty member's name, others place the scholar that conducted the most work last in order, and still others allocate the last space in a list to the funder of the lab in which the research was conducted. Each field understands how to interpret the author order on papers. This is not so in the humanities, where a common understanding of author order is not shared. Add to this the differing measure of

credit applied to joint authored papers by tenure and promotion committees, and collaboration becomes an extremely fraught problem. Regardless of such challenges, digital humanities scholars report that they produce better work together than alone (Siemens 2012).

While humanists' relative lack of collaborative research experience presents challenges, it also presents an opportunity for digital humanities to actively build, examine and rebuild institutional environments that foster collaboration.⁸ It is crucial that we tailor the existing science laboratory model to meet best practices in the digital humanities. We might not yet understand how to most effectively manage collaborative projects, but digital humanists are engaging with tough ethical questions, from how to appropriately credit work to diversity in the field. For example, a Collaborators' Bill of Rights emerged from an Off the Tracks NEH workshop that articulated best practices for crediting participants in a project (mith.umd.edu/offthetracks/recommendations). The authors point to science and the arts as possible models for defining equitable crediting of project participation, but make stringent recommendations that connect to core digital humanities values. The bill of rights and subsequent discussions of equitable project team credit bodes well for the future of digital humanities and sets a standard for the field. The INKE project provides a useful example of credit attribution:

INKE establishes collective intellectual property provisions, specifying that all research materials generated in the course of the project be deposited in a "research commons" for shared access among team members. Work in the commons is understood to be open to reuse and publication by any INKE collaborator, "with full acknowledgment of that work's origins." For "presentations or papers where [INKE itself] is the main topic," the charter specifies "all team members should be co-authors." It also defines when, how, and where individuals should be listed for "named co-authorship credit" as active participants and defines situations in which an agreed-on corporate authorship notation (i.e., "INKE Research Group") is appropriate. Postdoctoral fellows and student assistants are specifically identified as eligible for equal acknowledgment when making "significant contributions to INKE's research." Project leaders are instructed to pay special attention to mentorship and to the professional growth of such employees. (Nowviskie 2011c: 176)

The emphasis on shared data, appropriate credit for work, and the importance of mentorship are common themes in the formation of field specific guidelines.

A theme in digital humanities distributed credit guidelines is the importance of a neutral space in which collaboration might occur. Star and Griesemer's (1989: 387) concept of boundary objects, where collaboration "requires cooperation—to create common understandings, to ensure reliability across domains and to gather information which retains its integrity across time, space, and local contingencies" that "creates a 'central tension' in science between divergent viewpoints and the need for generalizable finding." Development of a project model that denotes boundary objects provides a way to allow a group to work around some of the conflicts that occur during project development. Many digital humanities projects are co-invented, but

it remains difficult to create real use and meaning for all in the participating group and to appropriately give credit where credit is due. Developing a shared territory could be a successful strategy for fostering equal participation and creation of a stronger project that benefits from the shared expertise of all partners. If we think about the boundary object as related to space and place, and of neutral spaces as crucial to such shared work, then the laboratory model emerges as one that could allow us to foster an equitable collaboration. The concept of neutral spaces, of spaces that are not highly regulated, the desire to offer open access and shared space, are more akin to a design lab than a science lab and emphasize the importance of looking to various laboratory traditions to produce a humanities based digital humanities lab.

As the INKE guidelines make clear, the neutral space of the laboratory must not neglect the importance of mentorship. As we utilize the science laboratory model, it is beneficial to carefully review how we are training the future of digital humanities, our graduate students. Many digital humanities practitioners have used traditional research assistantships as a means of immersing students in a project, creating, in effect, an apprenticeship for graduate students. If we return to the idea of the archive as a laboratory, we effectively find bench space for grad students. But while we often give students project tasks, we are less likely to allow the student to carve out a problem that might become the capstone of their PhD work. In other words, we have developed an apprenticeship model that is far more utilitarian than research oriented, tied to specific tasks set by the managing faculty member or the parameters of the project. This is not to suggest that we don't need to teach students basic skills in digital humanities. Our digital humanities students "must first master the relevant aspects of the existing history of an artifact necessary to the research, and then figure ways to alter it to carry out her project as the new research problems demand, thereby adding to its history"□ just as do students who undertake science research. A science laboratory model emphasizes interdependence, shared scholarship and exchange of ideas, and a closer working relationship for faculty, staff and graduate student than the humanities dissertation model currently in place. Newly developed programs, such as The Praxis Program at the Scholars' Lab at the University of Virginia,⁹ attempt to model the consolidation of training with graduate student centered research support. The Praxis Program is an exciting experiment that might prove an enticing model for replication in other programs. The project's success is partially based on the decision to locate the program in a neutral laboratory space. Clearly the project is designed to replace traditional research methodology courses with a more current set of skills for graduate students training to become contemporary digital scholars (Nowviskie 2012). The benefits of such training within a neutral lab space are myriad. The students receive cutting edge training from scholars who are doing R&D work on a daily basis. By moving students out of disciplinary departments the lab fosters the type of interdisciplinary work that we hope to achieve. Of utmost importance is the detachment of the training from the stasis of curriculum and degrees that move slower than most

digital skills. Yet the program's detachment also raises the problem of what it means to remove such work from where most of our students and faculty reside, where most academic work is conducted, the department. Does such a separation ensure that most of those trained within the traditional humanities will be unaware of and untrained for the digital future? Does this approach exacerbate the split between graduates trained in post-digital humanities and those who were unaware of digital humanities during their formative graduate years? The Scholars' Lab has launched what I suspect will be a model adopted by many digital humanities programs in the years to come. But we might wonder if the move to laboratory based training and research will signal the shift from a digital humanities contained within traditional fields to a separation from the traditional fields of humanities.

In addition to utilizing the laboratory model to develop new training approaches, we might also look to the science laboratory for more robust and effective mentoring approaches. While it is true that science has not solved all of its problems with mentoring, reward structures in sciences tend to enforce a codependency that is not present within the humanities. The lead faculty member in a science lab is responsible for funding and recruiting students for particular projects, most often financed by hard won grant monies. To complete the grant and to publish the paper, the faculty member, or a postdoctoral surrogate, will train the graduate student, who will be supported from the grant and receive some form of publication. While the system is not perfect and not all research labs encourage research groups that are codependent, in the best functioning groups, the faculty member needs the student in a way that a humanities faculty member does not need the humanities graduate student. While I would like to see my graduate students in English publish, my career is minimally impacted if they do not. If a science faculty member does not work with the student to publish, the faculty member's publication rate is diminished, adversely impacting the faculty member's career. Certainly there are abuses of graduate students in the sciences, but the interaction between faculty and student occurs in a symbiotic manner that tends to spur higher quality mentoring and increased scholarly production.

The problem with moving to a symbiotic mentoring system is that most digital humanists are trained and housed within traditional humanities programs, which emphasize products that are produced by individual scholars, such as monographs and individually authored papers, not the collaboratively produced documents common to digital humanities. While the best humanities mentoring emphasizes working closely with students in reading groups, providing feedback to student writing, and discussing student ideas for scholarship, the structures of the disciplines do little to reward faculty for good mentoring. For digital humanists, the laboratory has become a space to challenge the isolated scholar model. Also students that produce individually authored work might congregate in the laboratory to learn skills, share ideas, and receive feedback. To encourage such work, many digital humanities laboratories are

supporting scholars with fellowships or internships that emphasize different structures of working. But these are stopgap solutions, where digital humanities scholars must work within seemingly contradictory environments to produce what often times becomes double the work of those positioned within traditional fields. Ultimately we need to be sure that graduate students interested in training as digital humanists are allowed to utilize the form of scholarship that best suits their research projects, and a potential model for such interactions comes from the sciences.

In 1989 R. G. Potter called for a revision of literary studies; "What we need is a principal use of technology and criticism to form a new kind of literary study absolutely comfortable with scientific methods yet completely suffused with the values of the humanities" (xxix). □ Over twenty years later, we still have not adopted a model that selects the best of the two disciplines. "In general, we must acknowledge," says Liu (2004), "the profession of the humanities has been appallingly unimaginative in regard to the organization of its own labor, simply taking it for granted that its restructuring impulse toward 'interdisciplinarity' and 'collaboration' can be managed within the same old divisional, college, departmental, committee, and classroom arrangements supplemented by ad hoc interdisciplinary arrangements" (13). □ We need to work together, in shared spaces, to develop working models that best match our scholarship. We should not merely mimic the current institutional structures of the sciences nor the humanities. If we use the laboratory as a neutral space to foster the type of collaborative work we imagine is possible, we are using the laboratory as more than a space, but a symbol of our hopes. Patrik Svensson (2012: para. 2) notes, "the digital humanities often become a laboratory and means for thinking about the state and future of the humanities, as well as how this visionary discourse shapes the field and what that tells us about the current state of both the field and the humanities." Svensson identifies what seems to be the driving interest in the science laboratory. It is a space into which we can imagine our hopes for new practices.

Notes

1. Notable forerunners to the laboratory model are the Stanford Humanities Lab, launched in 2000, and the even earlier HUMLab, launched in 1998.
2. Lynne Siemens and Ray Siemens, "Notes from the Collaboratory: An Informal Study of an Academic Lab in Transition," *Digital Humanities* 2012, <http://lecture2go.uni-hamburg.de/konferenzen/-/k/13921>
3. The separation of pedagogy from research in the science lab is a current invention. Park and Daston note that the early labs emphasized a multiplicity of purposes from "the production of natural knowledge" to "a place of pedagogy, entertainment, and the production of goods." Katherine Park and Lorraine

Daston, eds. *Early Modern Science*, vol. 3, Cambridge: Cambridge University Press, 2006. Print. *The Cambridge History of Science*, 305. While labs would continue to serve multiple purposes for several hundred years, science labs would become increasingly specialized. See Stvilia, Besiki, et al., "Composition of Scientific Teams and Publication Productivity at a National Science Lab," *Journal of the American Society for Information Science and Technology* 62 (2: 2011): 270–83. Print.

4. See Patrik Svensson, "From Optical Fiber to Conceptual Cyberinfrastructure," *DHQ* 5 (1: 2011): no page. Print. Svensson offers an important meditation on the design of studio space might be articulated within a digital humanities lab.

5. Twitter feed, July 18, 2012.

6. Jonathan Arac also calls for work that is "laboratory" based. Jonathan Arac, "Shop Window or Laboratory: Collection, Collaboration, and the Humanities," in *The Politics of Research*, ed. E. Ann Kaplan and George Levine, New Brunswick: Rutgers University Press, 1997.

7. Borgman lists collaboration as one of the primary areas of exploration that the humanities might examine.

8. Humanities scholars have some forms of trained collaboration. Peer review offers a form of collaboration and co-authored scholarship occurs. However, the norm of the lone scholar continues to dominate training and practice.

9. For additional information about the Praxis program, see <http://praxis.scholarslab.org/>